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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/911,001	07/23/2001	Scott R. Hinson	0322360010	3688

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EXAMINER

WILLIAMS, DEMETRIA A

ART UNIT	PAPER NUMBER
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2631

DATE MAILED: 04/21/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/911,001

Applicant(s)

HINSON, SCOTT R.

Examiner

Demetria A. Williams

Art Unit

2631

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 July 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-34 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5, 8, 13, 17-30 and 32-34 is/are rejected.
- 7) ☒ Claim(s) 6, 7, 9-12, 14-16 and 31 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 July 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 6 and 7.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-5, 8, 18-30, 32, and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Overton in view of Lehman ("Lehman").
3. Regarding claims 1 and 26-28, Overton discloses a transmitter which performs frequency conversion comprising a combiner for combining a plurality of channel signals, a first local oscillator for generating an up-conversion signal, a mixer for mixing the first local oscillator signal with the combined signal to provide an IF signal, a filter for filtering the IF signal, a second oscillator for providing a down-conversion signal, and a second mixer for mixing the filtered signal with the oscillation signal to provide an RF signal (see generally column 3, line 11 – column 5, line 6; figure 1). The system disclosed by Overton includes a single combiner for combining all channel signals and therefore does not require an RF combiner. However, separating the signals into groups and combining the signals using a plurality of combiners is not a novel concept. Lehman discloses such a system where groups of modulated signals are separately combined depending upon the type of channel signal. After frequency conversion to the RF band, the signals are combined using an RF combiner (see generally figure 1; column 6, lines 1-32). It would have been obvious to one of ordinary skill in the art at the time of the

Art Unit: 2631

invention to modify the invention of Overton to include multiple combiners and an RF combiner, as taught by Lehman, in order to provide grouping for various types of channels.

4. Regarding claims 2 and 29, as stated above, the Overton system contains a single combiner for combining all channel signals eliminating the need for a plurality of synthesizers.

However, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the invention of Overton to separate the single combiner into plural combiners and to provide a synthesizer for each combined output signal.

5. Regarding claims 3, 4, and 34, Overton further discloses that the digital signal processors are programmed to modulate the signals in the desired format, such as TDMA modulation (see generally column 3, lines 38-45).

6. Regarding claims 5 and 30, Overton further discloses that the channel signals sent to the combiner are equally space apart in frequency (see generally column 3, lines 49-56).

7. Regarding claim 8, combiners of various types are well known in the art to combine various numbers of signals. Choosing the amount of signals to be combined in each combiner is a matter of design choice.

8. Regarding claim 18, Overton further discloses that the channel signals are digital signals and the combiner is a digital combiner (see generally column 3, lines 28-51; figure 1).

9. Regarding claims 19 and 20, Overton further discloses a plurality of digital signal processors that modulate digital data into a modulated data stream (see generally figure 1; column 3, lines 29-40). The modulated signals are then sent to a combiner for combining the multiples channel into a combined channel (see generally figure 1; column 3, lines 49-60).

Art Unit: 2631

While Overton does not specifically recite a “modulator combiner”, the combined functionality of the DSPs and the digital combiner perform the same function, as would a single element.

10. Regarding claim 21, Overton discloses all of the elements as described above in reference to claim 20, but does not include a configuration where a plurality of “modulator combiner units” are combined in a daisy chain manner. However, as explained above, using multiple combiners is not a novel process. Lehman discloses a system where multiple combiners, embodied as channelizer banks, are used to combine modulated signals (see generally figure 2; column 17, lines 31-65) and these channelizer outputs are connected in a daisy-chain fashion. It would have been obvious to one of ordinary skill in the art at the time of the invention to expand the teachings of Overton to include multiple combiners connected in a daisy-chain fashion, as described by Lehman, in order to reduce the number of additional components required for each combiner and therefore reduce cost (see generally Lehman, column 1, lines 30-59).

11. Regarding claim 22, Overton further discloses the use of DACs for converting the combined signal channel to analog form (see generally column 4, lines 14-45).

12. Regarding claim 32, Overton and Lehman disclose all of the elements as described above in reference to claim 28. Lehman further discloses that the down-converted RF signals must be located within the frequency range of 1930 to 1990 MHz (see generally column 4, lines 37-44). It would have been obvious to one of ordinary skill in the art to adjust the oscillator signals to ensure this range is maintained because different communications protocols require the use of certain frequency ranges.

13. Regarding claims 23-25, Overton discloses a plurality of digital signal processors that modulate digital data. The digital data is then sent to a combiner and then to DACs for

Art Unit: 2631

converting the signal to analog. While Overton does not disclose that the DAC is internal to the modulator, it would have been obvious to one of ordinary skill in the art that whether the converter is located within the modulator or whether it follows as an external component, analog channel signals are still produced prior to frequency conversion. From this it follows that in the presence of analog signals would be an analog combiner, as claimed in claim 25.

14. Claims 13, 17, and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Overton in view of Lehman, as applied to claim 1 above, and further in view of Waight.

15. Regarding claim 13, Overton and Lehman disclose all of the elements as described above in reference to claim 1, but neither specify that the filter used is an image reject filter. Waight discloses the structure for a typical dual frequency conversion system wherein a filter is used that provides image rejection (see generally column 1, lines 31-35). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the invention of Overton to include the use of a filter with image rejection qualities in order to improve the signal prior to down-conversion.

16. Regarding claim 17, Waight further discloses the use of adjustable oscillators for the down-conversion stages. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of Overton to include the use of adjustable oscillators as taught by Waight in order to eliminate interference between the oscillators (see generally column 3, lines 50 – column 4, line 21).

17. Regarding claim 33, Overton and Lehman disclose all of the elements as described above in reference to claim 32, but do not disclose the use of adjustable oscillators for down conversion. Waight discloses the use of adjustable oscillators for the down-conversion stages. It

Art Unit: 2631

would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of Overton to include the use of adjustable oscillators as taught by Waight in order to eliminate interference between the oscillators (see generally column 3, lines 50 – column 4, line 21).

Claim Objections

18. Claims 6, 7, 9-12, 14-16, and 31 are objected to as being dependent upon a rejected base claim.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Demetria A. Williams whose telephone number is (703) 305-4078. The examiner can normally be reached on Monday - Friday, 8:00 - 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chi Pham can be reached on (703) 305-4378. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9314 for regular communications and (703) 872-9314 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3800.

daw
April 17, 2003

TESTAMENT BUREAU
PRIMO EXAMINER